CONCEPT PAPER ON THE THEMATIC AREAS FOR THE SUSTAINABLE BLUE ECONOMY CONFERENCE

OVER-ARCHING THEME

BLUE ECONOMY AND THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

The 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs) give a prominent role to the blue economy in advancing the achievement of sustainable development. Although there is no universally agreed definition of the blue economy, it is generally considered to encompass the sustainable use and conservation of the oceans, seas, lakes, rivers and other water resources. These resources present a development front with immense potential for contributing to sustainable and inclusive development.

Indeed, many countries have embraced the benefits of oceans, seas, lakes and rivers and are deploying them to drive economic growth, social progress and protection of the environment. The United Nations Environment Programme estimates that half of the world's population lives within 60km of the sea, and three quarters of all large cities are located along the coast. According to the International Maritime Organization (IMO), up to 90 percent of the global trade facilitation by volume is seaborne and up to 70 percent of global trade facilitation by value is by the sea.

Moreover, the Food and Agriculture Organization (FAO), estimates that fishers, fish farmers and those supplying services and goods to blue economy related industries assure the livelihoods of as many as 660–820 million people worldwide, and that women account for about 15 percent of people directly engaged in fisheries. The World Bank approximates that oceans absorb about 25 percent of the extra Co_2 emissions added to Earth's atmosphere by burning fossil fuels. Oil and gas remain major sources of world energy with approximately 30 percent production being offshore. The International Energy Agency estimates that renewable energy output potential is 100 percent-400 percent of current global energy demand.

Despite the evident benefits of the oceans and other marine resources, there are a myriad of challenges that need to be addressed. These challenges include: lack of shared prosperity and weak inclusion in decision-making processes; maritime insecurity; unsustainable human activities around and in the oceans, seas, lakes and rivers and lack of an inclusive consideration of ecosystem service values to support sustainable policy decisions; lack of natural and manmade protection making some countries vulnerable to the negative impacts of climate change; pollution, invasive alien species, and ocean acidification causing biodiversity loss compromising human health and food security; weak legal, policy, regulatory and institutional frameworks; poorly planned and unregulated coastal development; as well as unsustainable extraction of minerals which is also exerting additional pressure on the resilience of the aquatic resources.

In order to overcome these challenges and seize the growth opportunity presented by the transition to a sustainable blue economy, it is necessary to allocate and re-allocate significant capital to sustainable investment, for example in the form of innovative financial instruments.

Transformative thinking and integrated actions are required to make the blue economy more productive, inclusive and sustainable. The survival of humanity, biodiversity and ecosystems depends on collective and bold interventions by all stakeholders. A global strategy that puts people – men, women and youth – and the blue economy sectors at the centre of sustainable partnerships and projects is vital to increase economic prosperity, social inclusivity and resilience of all marine and aquatic resources and the communities they support.

Maritime transport and global connectivity can promote gender equality, full employment and decent work for all to facilitate economic growth and poverty eradication. Coastal and lake-facing cities can increase their GDP growth and resilience by leveraging tourism and culture while conserving coastal and aquatic ecosystems. Aquatic invasive alien plants can be turned into renewable energy alongside wind and tidal waves. Empowering small-scale fishers and entrepreneurs to adopt sustainable practices including value addition can bring about new business opportunities and end hunger and malnutrition by securing food supplies, promoting good health and dietary practices.

Sustainable management of marine life is important in Marine Protected Areas. Marine parks, nature reserves and locally managed marine areas can protect reefs, sea grass beds, shipwrecks, archaeological sites, tidal lagoons, mudflats, salt marshes, mangroves and rock platforms. They can protect important habitats and representative samples of marine life and assist in restoring the productivity of the oceans, avoid further

degradation and provide natural solutions to climate impacts. They are also sites for scientific study and can generate income through tourism and sustainable fishing.
Consideration of the full economic value of marine and freshwater ecosystem services can aid decisions on sustainable development and use of marine and freshwater resources, as embodied in the concept of the Blue Economy. Valuation of ecosystem services helps in the understanding of the direct and underlying goods and services the ecosystems generate, and can bring environmental information into decisions on economic development and conservation planning. Information that better reflects nature's contribution to economic well-being can support communities and decision makers as they assess alternative policies on ocean protection and economic growth. Further, proper accounting of the value of ecosystems is key to unlocking public and private investments.

Best practices, information and knowledge on sustainable blue economy resources governance that reinforce maritime safety, security, regulation and enforcement can ensure productive, inclusive and sustainable blue economy that empowers all countries, peoples and communities. SDG 14 calls on the global community to "conserve and sustainably use the oceans, seas, and marine resources for sustainable development". SDG 5 on the other hand aims to achieve gender equality and empower women and girls. Taking urgent and bold actions and appropriate measures is required to realize these critical goals. Failing to approach the blue economy conversation in a gender transformative way brings the risk of exacerbating gender inequality while disenfranchising a significant share of the population.

The 2030 Agenda for Sustainable Development envisions a present and future that is economically sustainable, socially inclusive and environmentally resilient. Realizing these ambitious goals is possible if the global community works collectively in promoting sustainable utilization and conservation of blue economy natural resources. With adequate financing, new technologies and innovations, capacity building and good governance, investing in the under-developed sectors of the blue economy and turning the challenges facing them into opportunities for peoples and communities across the globe should be a priority for global leaders in public and private sectors. Specifically, public and private investments can be harnessed to work individually and collectively to ensure the world derives maximum benefits from the blue economy, while supporting community resilience. The time to build and escalate sufficient global momentum is now.

Panelists will be expected to guide the deliberations by making presentations based on the following questions:

i. *How can countries and stakeholders work together to structurally transform their economies using the blue economy to be more, inclusive, robust and resilient?*
ii. *How can countries and stakeholders ensure that increased and more sustainable growth from the use of the blue economy is broadly shared, inclusive and takes into consideration traditional and customary users?*
iii. *What are the best practices, technologies, innovative solutions and information available to advance sustainable blue economy investments, conservation and coastal resilience, which can be replicated on a global scale?*
iv. *What incentives does the private sector need to scale up investments in the blue economy while ensuring that small scale investors are not locked out?*
v. *Regional and international cooperation is needed, particularly given public good components of oceans, seas, lakes and rivers. How should global and regional partnerships be designed to support countries to develop and implement reforms to facilitate mainstreaming of opportunities from the blue economy?*

THEMATIC AREA 1: SMART SHIPPING, PORTS, TRANSPORTATION AND GLOBAL CONNECTIVITY

Transportation in general and maritime transport in particular remains the backbone of the world globalized economy. As the cheapest mode for bulk transportation with over 90 percent by volume and 70 percent by value of global trade, shipping and seaports are at the forefront of globalization. Therefore, maritime transport and related developments in transport technologies play a crucial role in the global economy. The 2030 agenda for sustainable development also underscores the role of seaborne trade as an engine for inclusive and sustainable growth and development.

Globalized production and distribution of goods require effective logistics with shippers focusing more on balancing inventory holding costs against transportation costs. Maritime transport services create job opportunities in among other areas, shipping, ship building and repairs, vessel registration, seafaring, port operations, insurance, shore based auxiliary support and financial services. Recognition of the important role of maritime transportation in the developed economies attracted

huge investments in infrastructure and operations and has seen emerging economies also increasingly raising their level of participation by building the necessary capacity.

Countries looking to increase their participation in global transportation must out of necessity improve their physical and electronic connectivity as well as the regulatory framework as part of their overall competitiveness strategy. In this context, governments need to understand determinants of efficiency in different transportation modes but also the intermodal interfaces and develop informed supportive policies. Also important is the need to understand the differentiated impact of transportation and connectivity on various developmental stages so as to develop tailored solutions. Ratification and adoption of relevant international conventions is essential for not only orderly growth but also facilitation of sustainable environmental responsibly for posterity.

Ports are important water-land interfaces in the logistics chain that are increasingly becoming important crystallization points for other maritime economic activities such as cruise vessels, coastal shipping, international shipping, passenger ferries, fishing, mining of marine minerals, oil drilling and other offshore economic activities.

Port efficiency and connectivity can unlock or undermine economic potential of a country. Today, the race among ports is on enhancement of efficiency with the overall goal of transforming into transshipment hubs. Transshipment hubs generate cost savings from economies of scale, raise port earnings, attract frequent feeder services and create opportunities for coastal shipping. Other than cargo handling, a well-developed transshipment hub provides incentives to establish industries that intercept cargo for intermediate processing, sorting, repackaging, labeling, sampling, inspecting and valuing. The entire transport sector is therefore an area of great opportunities.

However, opportunities do not come void of challenges. Low shipping connectivity continues to undermine access to global markets. The few, less reliable direct port calls require marked improvement in port efficiency and capacity to attract direct port calls. Other key challenges are increased concern on the greenhouse gas emissions, climate change impacts, marine pollution, piracy, terrorism, crime, illicit trade, human trafficking, cybercrime disruptions and inadequate human, financial and technological capacity.

Growing the transport sector and overcoming the above challenges calls for the public and private sector to cooperate in building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation in an effective regulatory framework to

achieve even greater progress. Further, and through deliberate linkages between research institutions and academia, the business community can further enhance their role in promoting investments in the sector, with research institutions sharing knowledge and information to enhance efficiency, safety and sustainability of investments.

To further inform the debate in pursuit of effective smart shipping, ports, transportation and global connectivity, the panelists and presenters are invited to address among other issues, responses to the following questions:

1. *How can countries attract and maintain sustainable and climate change proof investments in the underutilized areas of maritime transport? How can we enhance environmental and social corporate responsibility and accountability measures?*
2. *How can transportation potential of inland waters be developed to enhance hinterland connectivity?*
3. *What kinds of incentives are needed to strike a balance in the use of fossil fuels and renewable energy to drive the transport sector?*
4. *What are the opportunities for ports and shipping lines to enhance global maritime connectivity and how can they be enhanced?*
5. *What measures are needed to integrate women, youth and marginalized populations in to mainstream maritime transport sector?*
6. *How can access to technological milestones and innovations be enhanced to promote energy efficiency in maritime transport?*

THEMATIC AREA 2: EMPLOYMENT, JOB CREATION AND POVERTY ERADICATION

According to the FAO, 120 million people reach working age every year but many struggle to find jobs. The maritime industry is male dominated and is missing out on skills and talents of outstanding female maritime and ocean leaders. Moreover, while women form about 50 percent of the global population, only about 1 percent are in the seafaring industry and only 4 percent in decision making positions. This lack of inclusivity poses challenges to the long-term viability of the blue economy sectors.

Blue economy sectors have the potential to unlock opportunities for all towards the attainment of the UN 2030 agenda with specific focus on gender equality (SDG 5) and decent work and economic growth (SDG 8). Blue economy based industries contribute approximately USD 1.5

Trillion (2.5 percent) to global gross value added, with the potential to deliver growth and jobs in activities such as fisheries, aquaculture, shipping, transport and logistics, tourism, marine industries, ship building equipment and services, marine energy, oil and gas, marine insurance, workforce training and development, ports, deep sea archeology, among others.

The blue economy features strongly in several regional strategies aimed at attaining the UN 2030 Agenda for Sustainable Development. The European Union, for instance, announced its 'Blue Growth' strategy for sustainable development of marine and maritime sectors to contribute to the Europe 2020 strategy for smart, sustainable and inclusive growth. Indeed, the African Union recognizes the blue economy as the "New Frontier for African Renaissance" in its 2050 Africa Integrated Maritime Strategy. A number of multilateral institutions, such as the APEC, East Asia Summit (EAS), the South Asian Association for Regional Cooperation (SAARC), African Union and the Indian Ocean Rim Association (IORA), among others, pursue multilateral approaches, strategies, and actions plans towards sustainable development of marine resources.

However, challenges such as lack of relevant technology, human capacity, and financial capability and to a larger extent exclusion of women and girls from the sector hinder the attainment of full potential of the blue economy for job creation, economic growth and poverty eradication.

In order to address the above challenges, Panelists will be expected to guide deliberations by making presentations based on the following questions:

1. *What untapped opportunities are there within the blue economy that can be leveraged to sustainably provide decent work and create wealth?*
2. *Blue economy sectors are experiencing difficulties in finding the right labour force for highly qualified technical positions. How can this be addressed?*
3. *What gaps exist in terms of knowledge and skills provided by training institutions to correspond to the blue economy's needs?*
4. *What legal and policy frameworks are available for ensuring equal opportunities for women and girls within the blue economy sector?*

5. *How can the blue economy sectors be made more attractive to empower women, youth and vulnerable groups economically?*
6. *How can we strike the right balance between the needs of the current and future generations in creation of blue economy jobs as well as harness the role of indigenous knowledge and community-led management?*
7. *What are the employment opportunities for the conservation, management, rehabilitation, and data collection and observation of aquatic resources? And, how can these opportunities, including training and recruitment, be funded?*

THEMATIC AREA 3: CITIES, TOURISM, RESILIENT COASTS AND INFRASTRUCTURE

For thousands of years people have been living along the coastlines having the ocean, lakes and rivers at the centre of subsistence and economic activities. The United Nations Environment Programme estimates that half of the world's population lives within 60km of the coast lines. Three quarters of all large cities of the world are located along the coast including Tokyo, Osaka, Seoul, Shanghai, Jakarta, Mumbai, and New York which are among the ten largest cities of the world. About 90 percent of the world trade goes through port cities, reinforcing global value chains and generating employment.

The global population currently estimated at 7.6 billion people, is projected to increase to 9.8 billion people by 2050. This increase combined with unplanned rapid urbanization, increased global trade flows and fast growing coastal and maritime industries, contributes to the current degradation and unsustainable exploitation of over 60 percent of the marine ecosystems.

The blue economy offers significant opportunities to improve livelihoods for all and sustainable urban development. Indeed, the contribution of the blue economy to land value in cities and the broad range of direct and indirect livelihood and economic opportunities are obvious. While it offers economic opportunities to all income levels, sandy beaches attract numerous tourism related activities such as leisure accommodation and water sports. In fact, in the continental Africa, coastal cities in West Indian Ocean (WIO) including Mombasa, Dar es Salaam, Pretoria, Beira and Durban have close to 60 million inhabitants, an estimated annual economic value of US$25 billion per annum derived from tourism, fisheries, coastal agriculture, mining, aquaculture, and ports and coastal transport sector (UNEP/Nairobi Convention, 2009) and an ocean asset base estimated at US$333.8

billion making WIO's productive potential comparable to the largest national economies in the region.

Coastal cities have been of historical and cultural importance and they play a crucial role in harnessing the potential of the blue economy and improving the living standards of the coastal communities. However, some coastal communities and cities have been rendered vulnerable by the impacts of climate change.

A number of cities, for instance in the Netherlands lie below sea level exposing them to the impact of rise in sea levels. While many countries have put in place mitigation and adaptation measures to climate change, more needs to be done. Small Island Developing States (SIDs) are particularly vulnerable to threats of unsustainable coastal urban development, tourism and other economic activities. Local communities along the water front in these countries face the highest impacts of climate change, for example the severe storms in the Caribbean has increased eight times in the past 25 years.

Climate change impacts on oceans and coasts include: ocean warming; acidification; increased salinization; higher frequency and severity of extreme weather conditions; worsening water quality and supply; increased flooding and storm surge; and, damaged shorelines, natural environment and infrastructure. In 2012, the World Bank sounded the climate change alarm, noting that projected increases in sea level and the frequency and severity of tropical storms will endanger coastal cities such as Jakarta, Bangkok, and Ho Chi Minh City.

Regional Risk Pools, such as the Caribbean Catastrophe Risk Insurance Facility (CCRIF), a multi-donor facility hosted by the World Bank which provides parametric insurance coverage, are vital in allowing SIDS and other developing countries to protect coastal areas and build back after extreme weather events.

The scale and nature of these economic activities typically create proportional environmental impact and cost and given the frequent fragility of coastal zones and oceans, this needs careful management to ensure sustainability. Indeed, urbanization and tourism activities have resulted in large scale investments including port upgrade, renewed and resilient urban infrastructure along the coast and other water bodies including lakes and rivers. A balance must, therefore, be created to ensure proper use and conservation of marine and other aquatic resources in a manner that is environmentally sustainable and inclusive. Information on the economic value of marine and freshwater ecosystem services, especially for services without a market price, can enable more comprehensive assessments of the positive and negative impacts of policy alternatives to achieve the desired balance. In addition,

information on values can be used to develop incentive-based policies that support sustainable economic development.

Private sector investment in the preservation and rehabilitation of natural and built infrastructure can be an important tool for the preservation of coastal zones. Innovative financial mechanisms, such as insurance for natural infrastructure, can help to stimulate private investment. For instance, in Quintana Roo, Mexico, the regional government is working with the Cancun Hotel Owners Association, the Nature Conservancy, and the insurance industry to protect a 60km stretch of coral reef through a parametric insurance scheme in which the hotel owners fund the preservation and rehabilitation of the reef as a condition of a policy that insures the reef and beach in the case of extreme weather events. This approach appears to be highly scalable.

Despite the opportunities offered by the blue economy, cities and related activities generate considerable amount of solid and liquid waste and air pollution in significant measures that at times end up in the aquatic ecosystem. This issue requires concerted efforts in developing solid as well as liquid waste management strategies to curb pollution and its effects to the ecosystem.

Based on the above opportunities and challenges, adequate urban planning and city development and governance structures are required. There is an urgent need to limit the environmental impacts of urbanization and tourism activities while responding to increasing frequency and intensity of climate induced events. An urban planning approach that takes marine spatial planning, climate impacts and resilience into consideration will ensure sustainable development of coastal cities and communities. Furthermore, this will aid in preservation of ecosystems, protection of heritage and harnessing socio-economic opportunities.

Formulation of policies and strategies that address the above opportunities and challenges as well as impacts should be put in place. These include adoption of practical solutions to urbanization challenges through integrated urban planning and management, promotion of sustainable land management practices, as well as integrated land and water resources management in addition to practical resilience, adaptation, mitigation and transformation strategies for sustainable blue economy.

Questions to guide panel discussions:

1. *How does the spatial development of coastal cities optimally harness the potential of the blue economy while addressing resilience?*

2. *How can waterfront cities and towns optimize the opportunities offered by the blue economy in a sustainable and inclusive way?*
3. *What legal and institutional frameworks should be put in place to regulate, identify priorities and guide the development of waterfront cities and towns and to promote local and international investment in these cities?*
4. *How does the governance and management of coastal regions and ecosystems respond to challenges of communities depending on the blue economy?*
5. *How should coastal cities restructure their public expenditures and investments to fully harness the potential of the blue economy? Acknowledging that the public sector alone will not be able to provide sufficient funding to sufficiently boost and protect the blue economy, how can we attract sustainable and innovative blue finance?*
6. *Transformation of coastal cities will likely impact various population sub-groups differently. City expansion for instance usually claims agricultural land. Women over-represented in agriculture with limited ownership on the critical land input. How do we involve various population sub-groups in the conversation? How do we account for the differentiated impacts?*

THEMATIC AREA 4: SUSTAINABLE ENERGY, MINERAL RESOURCES, AND INNOVATIVE INDUSTRIES

The sustainability of energy and mineral resources within and around water bodies is important in the public discourse on the blue economy. With increasing primary energy demand across the key fuels (oil, coal, gas, biomass, nuclear, hydro and other renewables), the whole subject of energy efficiency becomes a critical driver for sustained blue economy developments. Many countries and especially Least Developed Countries (LDCs) and SIDS rely directly on oceans, lakes, seas and other water bodies which are the backbone of their existence.

It is also important to note that many of the world's minerals are found within the oceans, seas, or in lands adjacent to inland water courses. Sustainable extraction that protects the fragile marine and water ecosystems is therefore vital as states seek to benefit from important resources found within their jurisdictions, and including shared trans-boundary resources. Greening the blue economy therefore provides the world with important avenue of realizing the sustainable development objectives under the Agenda 2030.

The blue economy has diverse components, including traditional ocean industries such as fisheries, tourism and maritime transport but the new and emerging activities, include offshore renewable energy (wind, tidal waves, ocean thermal energy conversion, salinity gradient and biomass) and seabed extractive activities (oil and gas). These are important to the energy sector as they offer alternative sources of energy from the renewable sources and nonrenewable sources.

Sustainable marine energy exploration and development can play a vital role in social and economic growth, as well as in offering realistic climate adaptation and mitigation alternatives. While offshore wind energy is becoming more common, other forms of marine energy extraction are still at the experimental phase and in most cases have not yet been fully developed to a commercial scale.

Adopting sustainable blue economy interventions will result in a low-carbon pathway based on sharing, collaboration, resilience, opportunity and interdependence among. It is an economy driven by investments that reduce carbon emissions and pollution, enhance energy efficiency, and harness the power of natural capital, such as the oceans, and halt the loss of biodiversity and the benefits that ecosystems provide. As the exploitation of marine energy and mineral resources can have impacts on valuable ecosystem services while providing valuable ecosystem goods and services, consideration of the economic value of both positive and negative impacts on ecosystem services supports the blue economy sustainable economic growth objectives. The blue economy is a framework for achievement of sustainable development goals.

Blue economy has the potential to contribute to food security, carbon sinks, bio-prospecting, hydrocarbon sources, and transport and tourism development. It also offers huge untapped potential for renewable energy from wind, wave, tidal, Ocean Thermal Energy Conversion (OTEC) and salinity gradients and biomass sources.

The International Seabed Authority (ISA) has been established as the international body through which all states party to United Nations Convention on the Law of the Sea (UNCLOS) organize and control seabed mining–related activities in the area beyond national jurisdiction. A comprehensive set of rules, regulations, and procedures dealing with prospecting and exploration for minerals resources have been developed globally such as Multilateral Agreements and SDGs.

Little is still known about deep-sea habitats, their recovery potential, or the impact that mining operations are likely to have on ecosystems and the wider functioning of oceans. The short- and long-term impacts on economy and society in general remain largely unknown, and a lack of information on the economic values of ecosystem services,

comprehensive and dedicated regulation and enforcement regimes across Exclusive Economic Zones (EEZs) can further exacerbate the problem.

The transition from nonrenewable to renewable sources of energy has been slow due to lack of comprehensive policies and regulatory frameworks, technologies and capacities to sustainably develop and support the transition. There is need to strengthen institutions and frameworks for regulating and managing exploration and extraction of coastal and marine resources including deep-sea activities to ensure sustainability and compliance with global instruments such as UNCLOS and ISA as well as regional and sub-regional frameworks.

Since blue economy is a relatively new concept, countries need to support diverse groups of scientists, including women, to develop expertise and contribute innovatively in these areas. There is also need to invest in, and use the best available science, data and technology to strengthen the knowledge base, governance, reforms and shape management decisions for long-term changes. Therefore, managers should apply the precautionary approach principle to avoid irreversible damage to the ecosystem and they need to ensure appropriate social and environmental safeguards are put in place as part of strong governance arrangements. There is need for capacity building and strengthening partnerships for regional and global cooperation in order to realize the full potential of blue economy.

Panelists will be expected to guide deliberations by making presentations based on the following questions:

1. *What innovative renewable energy technologies should be used to ensure blue economy is both sustainable and inclusive?*
2. *What are effective policy and industry mechanisms to drive successful leapfrog transitions into sustainable energy sources?*
3. *Which hydro and marine energy technologies are suitable for use in developing countries?*
4. *What are some of the best practices in social enterprise models for sustainable and inclusive (women, youth and the vulnerable) energy and mineral extraction development?*
5. *What social innovations could be developed and deployed to assess who is participating and benefiting from ocean-based mining and energy sources- who is excluded, and what can be done to ensure inclusivity?*

THEMATIC AREA 5: ENDING HUNGER, SECURING FOOD SUPPLIES AND PROMOTING GOOD HEALTH AND SUSTAINABLE FISHERIES

SDG 2 seeks sustainable solutions to ending hunger in all its forms by 2030 and to achieve food and nutritional security. Food and nutrition security is achieved when enough nutritious food is available, accessible and utilized by the masses. Food security involves food availability (production, food imports and food stocks) access to food (business, food stocks, employment /social protection), as well as food utilization (food and nutrition interventions for vulnerable groups /nutrition education). Further, the affordability of food promotes good societal health. Sustainable fisheries, mariculture and aquaculture are well placed to meaningfully contribute to the achievement of this objective.

Despite progress toward global food and nutrition security in the past two decades, almost one billion people remain undernourished; and deficiencies in vitamins and minerals, which can increase morbidity and mortality among the billions of people who suffer from this "hidden" hunger, persist worldwide. One in eight persons world-wide suffer from life-long negative impact of under-nutrition. Children are the main victims, not only from increased morbidity and mortality, but also learning disabilities, delayed cognitive development and poor health. Given these various forms of malnutrition, the hunger situation in many developing countries remains serious; compromising human development, human capital and productivity hence negatively impacting economic growth.

Climate change has increased the vulnerability of poor people and is compromising food security. Data shows that if women accessed resources to the degree men do they could increase yields on their farms by 20 to 30% (FAO, 2011) – thus boosting food security and family health. Research shows that developing countries are expected to suffer most from the negative effects of climate change and may bear up to 80 percent of costs. Research also shows that women bear a disproportionate share of the burden coupled with social, economic and political barriers that limit their coping capacity. According to projections, by 2050 climate change may reduce food availability per capita and general well-being below current levels, and could increase the number of malnourished children by about 20 percent.

Addressing availability and access to food and nutrition involves market-based economic development (inputs, outputs, finance, aquatic resources and land), decentralization and price stabilization, as well as support to communities to withstand shocks and strengthen their resilience.

Food security can also be strengthened through interventions, such as safety nets, boosting agricultural productivity (smart and appropriate technologies for storage and transport of food resources derived from water bodies), opening up regional/international markets and improving early warning systems to detect risks/hazards. All of these issues must be mediated to a significant degree by the influence of the state, market, community institutions and processes; these needs to be addressed with reference to the specific local context with a view of incorporating global good practices.

Further, food and nutrition security can be tackled through combating desertification/land degradation, water harvesting and storage, land reclamation, rehabilitation of arid areas through afforestation, prevention of soil erosion including the optimum utilization of water bodies. Further, tapping of renewable energy adaptable technology, and promoting participation of vulnerable groups (women, youth, and people living with disabilities among others).

Food and nutrition security can also be strengthened through interventions like reducing food wastes and post-harvest losses, value addition, accessing credit facilities by small scale fishers and farmers, opening up more arable land and water bodies through application of highly water saving irrigation technologies in order to reduce over-dependence on rain fed agriculture.

In addition, policies to address chronic food insecurity must embrace both economic growth (raising incomes) as well as social protection to reducing the variance of incomes (and thus vulnerability), protecting the consumption patterns of the chronically poor, and improving access to basic services. Food and nutrition security can be achieved through agricultural production diversification, information, evidence based interventions, and enhancing fisheries resources utilization.

Currently, 70 percent of the globe constitutes oceans which provide only 2 percent of food requirement. Clearly, there is a need to explore the potential to increase production and harvest of edible aquatic resources through sustainable fisheries and enhanced aquaculture practices to feed and provide livelihoods to growing populations. Healthy oceans and water bodies therefore have a central role to play in solving one of the biggest challenges of the 21st century – how to feed 9 billion people by 2050.

Globally, fish supply is expected to reach 190 million tonnes in 2030 (an increase of 36 million tonnes from 2011). There should be deliberate and concerted efforts to increase utilization of this fish supplies (through promotion of sustainable aquaculture and small scale

fisheries) in an effort to bridge the gap of food insecurity. In order to achieve this, attention must be given to appropriate storage and transportation of edible fisheries resources. Depletion of food stocks and destruction of breeding grounds has a detrimental impact on food and economic security of local populations, including indigenous communities, living along/around the water bodies and indigenous communities.

Mainstreaming risk reduction, resilience enhancement, and food security requires incorporating the above efforts into preparedness, response, recovery, and development of policies for all stakeholders (local communities, non-governmental organizations, national/regional governments, and humanitarian and development agencies). Ensuring mutual learning and collaboration among various categories of partners is vital to the advancement of a coherent and coordinated reduction of food and nutrition security risks and vulnerabilities.

Forecasting and response capacities must be strengthened and the dissemination of early warnings must be improved, both locally and globally. Advance warning enables individuals, civil society organizations, governments, and international organizations to take the necessary actions to reduce people's exposure to risk while preparing for effective responses and recovery.

Community-based early warning and monitoring systems, as well as adaptable-innovative methods of disaster prediction and hazard mitigation, can play critical role in saving lives and livelihoods by allowing populations to better understand the food and nutrition security risks they face. Prediction and monitoring of natural disasters, extreme weather events, and price volatility are crucial tools for reducing vulnerability.

Questions to guide Panel discussions:

1. *What strategies can be employed to protect the aquatic environment from pollution that impact on fisheries resources (food safety and fish stocks)?*
2. *What opportunities can governments create to promote aquaculture through the inclusion and empowerment of women, youth and people in vulnerable situations?*
3. *What business models can be adopted to promote sustainable business oriented fisheries and aquaculture production as a*

means to tackle food and nutrition insecurity and improve livelihoods including vulnerable communities?

4. *What clean technologies can be adopted to ensure safe and appropriate food storage and transportation over waterways?*
5. *Women play a critical role in food systems but also happen to be most vulnerable to and affected by malnutrition and health issues. How do we involve them as key stakeholders as we seek sustainable solutions? How do we make sure that those solutions are sensitive to their specific needs and constraints? How do we support and strengthen the role that they are already playing in food and health systems?*
6. *How can Governments leverage blue economy opportunities to ensure more water harvesting and increase percentage of land under irrigation to enhance global food security?*

THEMATIC AREA 6*: MANAGEMENT AND SUSTAINING OF MARINE LIFE, CONSERVATION AND SUSTAINABLE ECONOMIC ACTIVITIES*

The world's aquatic ecosystems—including oceans, seas, rivers, lakes, marshes, bays, and other water bodies—constitute of a rich diversity of resources and services, including about 2.2 million species of plants, animals and other organisms, representing between 50-80 percent of all life on earth. Together with terrestrial counterparts, aquatic resources provide important goods and services such as food, medicines, coastal protection, carbon storage and livelihoods to humankind including socio-economic development around the world.

According to the OECD (2016), the annual total value-added of aquatic ocean resources is approximately $1.5 trillion, excluding the contribution to small scale activities and ocean ecosystem goods and services that support human well-being but are not traded in markets (i.e. non-market goods and services). Also, about 17 percent of total global animal protein is provided by fisheries thereby contributing to the nutrition requirements for billions of people. In addition, approximately 10-12 percent of the world's population derived their livelihoods from the 167 million tons of fish valued at USD$148 billion in exports from capture fisheries and aquaculture in 2014. Further, mangroves and other vegetated ocean habitats are important carbon sinks, sequestering about 25 percent of CO_2, and also provide protection from floods and storms to coastal communities.

As aquatic resources are the life-force that make human prosperity possible, their protection, management and restoration is essential to sustainable development. Anthropogenic factors however, continue to negatively impact aquatic health and productivity, and the draw-down of the natural capital is not accounted for in the traditional national economic indicators. Overexploitation, pollution, underwater noise, introduction of aquatic invasive species and habitat destruction through unsustainable and unmanaged activities are harming aquatic life and hindering its full potential on our planet. Over one quarter (27 percent) of the world's 845 species of reef-building corals have been listed as threatened, an additional 20 percent are considered near threatened. It has been predicted that a further 50 to 60 per cent of the world's reefs may be destroyed within the next 30 years unless urgent management measures are taken.

One quarter (25 percent) of marine mammals and six of the seven species of marine turtle are now threatened. It has also been estimated that over 100 million marine animals die annually due to plastic debris in the ocean. Further, overexploitation of fisheries resources has led to about 50 per cent of fish stocks being fully utilized and another 25 per cent overfished, leaving only 25 per cent with some potential for increased fish harvests. Vessel bio-fouling, uptake and discharge of ballast water by ocean-going ships continue to contribute to the worldwide spread of aquatic invasive species, harming biodiversity and negatively impacting the environment, economies, and public health.

Many aquatic resources are trans-boundary in nature, so strengthening cooperation, policy coherence and coordination among nations, institutions at all levels, including between and among international organizations, regional and sub-regional organizations and institutions, arrangements and programmes is essential in fighting drivers of aquatic resource degradation and in ensuring sustainable management.

Tools such as natural capital accounts, marine spatial planning, integrated coastal zone management and community-based protected areas can help this endeavour. Further, a comprehensive initiative that puts aquatic resources at the centre and finances various ways of sustainable management to restore the health of the world's aquatic ecosystems is critical. In addition, steps should be taken to develop comprehensive strategies to raise awareness of the natural and cultural significance of the aquatic realm, to support aquatic ecosystem-related

education, for example as part of education curricula, and to promote blue economy literacy and a culture of conservation, restoration and sustainable use of our aquatic resources.

Local innovations that balance the protection of aquatic ecosystems, the economy and the social needs of women, girls and marginalized groups must be identified and put into practice all over the World. It is important to mainstream aquatic biodiversity conservation in all productive sectors of the economy.

Innovative ideas such as debt-for-nature swaps, use of green, blue, and other types of bonds, represent a promising mechanism for financing the conservation of marine ecosystems. For instance, an innovative Seychelles debt transaction, negotiated in the Paris Club with support from the French government and The Nature Conservancy, converted a portion of the Seychelles' debt to use a portion of service payments to fund on-the-ground work for improved management of coasts, coral reefs, and mangroves. The deal will ensure approximately 400,000 km2 will be managed for conservation as marine protected areas within five years.

Examining a way forward to ensuring that the blue economy and blue growth approaches provide a platform and strategic framework for achieving the objectives of the SDGs, particularly SDG 14 (Conserve and sustainably use the oceans, seas and marine resources for sustainable development) and other international, regional and national legal frameworks, and action plans can help to achieve sustainability objectives/initiatives. Finally, nations need to dedicate greater resources to aquatic ecosystem research, scientific collaboration, and creating better networks for research coordination, observations, and the collection and sharing of data and knowledge on the health, productivity and sustainability of aquatic life.

Panelists will be expected to guide deliberations by making presentations based on the following questions:

1. How can blue growth and blue economy approaches be used to promote sustainable use of aquatic life?

2. What public engagement strategies are effective in raising awareness of the natural and cultural significance of marine life, as well as support to ocean-related education?

3. What are the policies and programs needed to strengthen understanding of the status and trends of aquatic ecosystems, and incorporation of this knowledge, including indigenous, into decision-making for a blue economy?

4. How can innovative financial instruments such as green and blue bonds and debt-for-nature swaps serve to promote conservation and resilience?

5. What role can communities play to help conserve, preserve and protect aquatic ecosystems? How can they be engaged through education and awareness?

THEMATIC AREA 7: CLIMATE ACTION, AGRICULTURE WASTE MANAGEMENT AND POLLUTION-FREE OCEANS The world's oceans and coasts provide invaluable ecosystem services that support the livelihoods of billions of people around the world. However, increased anthropogenic activities, coupled with the impacts of climate change put additional pressure on our world's aquatic ecosystems and undermine their health. To counter these impacts, the blue economy seeks to address the current economic and environmental challenges for improved human well-being and social equity, while significantly reducing environmental risks and degradation.

Blue economy stabilizes and sustainably provides food security. Blue economy's environment friendly businesses have the potential for many job opportunities, which could add gross value to the annual global economy. Climate change and environmental degradation are a threat to the integrity and sustainability of aquatic ecosystems, coastal communities, marine resources, port infrastructure, tourism and recreational facilities, among others, on which the blue economy is based. Protecting aquatic ecosystems and coastal regions through sustainable blue economy initiatives can help mitigate these pressures and increase resilience.

Climate change and Pollution are closely related with regards to substantially contributing to ocean degradation. Climate change impacts oceans mainly by warming, melting of the polar ice, raising the sea levels, changing the ocean's major current systems and causing ocean acidification. Elevated temperature affects biological diversity causing coral bleaching, forced migration of many species, interference with life cycles of marine species and nutrients availability to many important marine ecosystems. The rise in sea levels endangers the survival of coral reefs, mangroves, sea grasses, and other critical habitat-forming species as well as nesting beaches for marine life.

Ocean acidification caused by an increased CO_2 absorption directly harms or kills many ocean plants and animals that are sensitive to acidic conditions in the aquatic ecosystems. Also, Small Island states are directly threatened by sea level rise with some Kiribati citizens already being among the world's first refugees of sea level rise, and two of the nation's islands having disappeared into the ocean.

Pollution that is affecting the oceans includes nutrient over-enrichment, marine litter including plastics, chemical and oil pollution, and pollution from ships. Underwater noise is also having negative impacts on marine ecosystems. Sources of pollution of critical concern include non-biodegradables persistent pollutants and greenhouse gas emissions from ships. Nutrient pollution mainly occurs due to inefficient wastewater treatment plants, agricultural and urban runoff, polluted groundwater seepage, atmospheric deposition, and release of previously accumulated nutrients from sediments. The cumulative release of pollutants to oceans and water bodies from point and non-point sources greatly affects the growth of blue economy. Specifically, non-sustainable agricultural activities along the water bodies promote increased pollution in freshwater bodies, seas and oceans.

The effects of pollution on oceans include; depletion of oxygen content in the water, toxicity of the marine environment, contamination of food chains, hazard to human and aquatic health, hindrances to marine activities, disruption to reproductive systems and cycle of coral reefs, impairment of quality for use of water and reduction of amenities. Large algal blooms lead to very low levels of oxygen in water, killing fish, shellfish and aquatic plants.

The problem of marine litter into oceans is another major source of pollution. The World Economic Forum projects that in 2050, dumping of plastics into the oceans will be over 8 million tons per year resulting in more plastics than fish in the oceans. It's estimated that over 10 percent of the total ocean contamination is caused by lost or discarded fishing gear which can result in entanglement and death of marine mammals and other aquatic organisms.

Proper management of aquifers, rivers, and lake basins through the Integrated Water Resources Management (IWM) approach will uphold aquatic environment integrity and its economic sustainability. IWM Activities which would improve the quality of water entering the oceans include: the implementation of basin plans; the spatial planning, use of new technologies; compliance to legal frameworks; employment of best practices on waste management and flood management strategies; protected areas, building climate resilient communities;

capacity building and awareness campaigns; stakeholder and user involvement; establishing feedback systems; improving flag state implementation; port state control measures, and international cooperation on trans-boundary issues. In addition, management of the risks associated with the nuclear pollution of the oceans will be important to the sustainability of oceans and other water bodies.

Furthermore, pollution sources and their conduits need to be mapped and their subsequent integrated strategies developed and implemented. The establishment of a robust monitoring system of greenhouse gasses from the shipping industry, weather and water quality data monitoring networks, maritime forecasts and sea data observations will guide policy decisions toward pollution free oceans. Pollution detection of and response capacity to oil spills and disaster preparedness and response should be improved. The reduction of pollution in the oceans will enhance and sustain the blue economy, reduce pressure on land-based livelihoods, thereby reducing land-based pollution and improving increase the sustainability of a pollution-free aquatic environment.

Finally, the outcomes and prospects for effective climate change mitigation and adaptation measures will depend on the choices that humanity makes as a matter of priority. The development of climate change mitigation and adaptation strategies, will improve ecosystem service and natural capital values, build coastal resilience, support sound environmental stewardship, and cost-effective energy supply. This could be buttressed through the development and adoption of low-carbon and no-carbon energy technologies and eco-initiatives as best practices and innovations that can be focused for the sustainability of the blue economy. Agricultural and aquaculture best practices have the potential to lessen water pollution, limit climate change impacts on these sectors, and can help mitigate climate change and act as carbon sinks. Achievement of pollution-free aquifers, rivers, lakes and oceans call for a concerted effort, building of synergies and increased participation up to the local levels and targeted financial instruments to ensure the protection and preservation of the marine environment.

Questions for the Panel Discussions;

1. *What policies, legal, regulatory, and institutional frameworks can be implemented to reduce aquatic pollution?*
2. *What are the best strategies and enabling conditions to implement the "polluter pays principle" within developing economies?*
3. *What innovative small scale (under $500,000), middle market*

(between $500K and $5M) versus large scale ($5M +) technologies and financial mechanisms are there to support sustainable management of aquatic resources, coastal resilience, and pollution reduction?

4. *What are the key factors that drive effective and sustainable public - private partnerships to reduce the pollution and climate change?*
5. *How should the existing Multilateral Environmental Agreements be best implemented to sustainably manage aquatic ecosystems?*
6. *What concerted actions by the international community are required to stop the flow of plastics and marine in the aquatic environment?*
7. *How do we turn waste management into attractive business opportunities for women and youths?*

THEMATIC AREA 8: MARITIME SECURITY, SAFETY, REGULATORY ENFORCEMENT

Secure and safe oceans, seas and inland waters are essential for trade, communication, and job and wealth creation. However, security challenges in the same spaces have escalated as contemporary criminals and terrorist attacks on ports, offshore installations and ships with increased innovation and sophistication, endangering crew, ships, cargo, marine life and other investments. The impact of insecurity and the financial implication of mitigation measures, such as surcharges and use of armed guards have pushed maritime security and safety concerns to a new level of importance. Emerging threats such as terrorism and cybercrime continue to demand even more complex solutions for port operations and surveillance systems. The imperative to adopt international conventions on maritime safety and develop the necessary capacity for compliance will be crucial to ensure environmental protection and sustainability.

As maritime safety and security challenges continue to affect many states and sectors, collaboration is not only beneficial but essential to align and ensure the effectiveness of individual states' deterrent measures. At the international level, the International Maritime Organization (IMO) has championed the development of regulatory and infrastructural initiatives addressing, among other areas, comprehensive ship-boarding protocols, electronic systems that track real time location of ships, bilateral inspections of shipping containers before they are loaded, regional piracy information exchange centres, inter-agency response to threats, human resource capacity building and maritime cyber risk management. These tools can be used to address a

range of illegal activity, including illegal, unregulated and unreported (IUU) fishing.

There are also a number of local and regional initiatives aimed at realizing secure and safe oceans, seas and inland waterways so as to ensure sustainable use of blue economy resources. The need for collaboration has seen increased desire to address security and safety through establishment of regional frameworks and consultations with far reaching recommendations for enhancing cooperation among States on maritime security and safety.

In the above context, lawmakers, security agencies, industry operators and academia need to reflect on the state of maritime security, safety and regulatory frameworks and think critically about measures needed to address challenges in the short and long term. It is important to look into gaps within existing institutional and legal frameworks, infrastructure, technological knowhow and human capacity in order to build and sustain strategies on addressing orderly migration being cognizant of the upcoming Global Compact for Migration, maritime security and safety at national and global levels. This calls for conversations around technology, legal frameworks and enforcement capacity to address existing and emerging maritime security threats and safety and governance issues.

To further inform the debate in the pursuit of maritime security and safety, the panelists and presenters are invited to address among other issues, responses to the following questions:

1. *How can effective coordination among the various States and Security agencies be realized to eliminate duplication of efforts and resources targeting maritime security and safety?*
2. *What legal and institutional frameworks are needed to address the various existing maritime threats?*
3. *To what extent is the maritime industry prepared to anticipate, adapt and respond to insecurity challenges presented by an increasingly dynamic maritime sector?*
4. *What are effective enforcement mechanisms for the detection of threats and illegal activity (e.g. IUU fishing), and response to these activities to ensure the health, safety and protection of maritime zones?*
5. *What measures could be put in place to combat drug trafficking, respond to humanitarian disasters and keep pace with the evolving political, legal, safety and security considerations in the sector?*

6. *What clean and blue technology (including block chain and remote sensing) advancements are there to deal with maritime security issues in ports and waters particularly in regards to addressing lack of awareness, intelligence collection, processing and exchange of information?*

THEMATIC AREA 9: PEOPLE, CULTURE, COMMUNITIES AND SOCIETIES: THE INCLUSIVE BLUE ECONOMY

Our oceans and other water bodies' coastlines are vitally important global public goods and resources for many of the planet's most vulnerable people, communities and societies. An inclusive blue economy must take both of these dimensions into account. Communities living around water bodies have from time immemorial interacted with the oceans and other water bodies and derived a means of livelihood from them. Through time, they have built a wealth of knowledge on sustainable utilization of ocean-based resources. While most governments have mainly focused their socio-economic and environmental development on the exploitation of terrestrial resources, there is increasing realization that the oceans, lakes and rivers are fundamental in supporting livelihoods, preserving culture and social well-being of the people.

The blue economy concept, therefore, seeks to promote economic growth, social inclusion, preservation of culture and improvement of livelihoods while at the same time ensuring environmental sustainability of the water bodies and their surroundings.

Culture has been identified as one area that needs to be recognized in discussing matters of sustainability in the management of water bodies. A World Bank report (2005) states that the economic contribution of the ocean to humankind has been significantly undervalued in particular where the value of non – market goods and services, such as carbon sequestration, coastal protection and recreation and cultural and spiritual values are concerned. This, therefore, calls for a new form of understanding the oceans, which incorporates environmental and social dimensions.

The communities that live around water bodies have significant roles in ensuring and promoting healthy water ecosystems. Millions of people around the world depend on healthy marine and fresh water ecosystems for their livelihoods, culture and security. In order to establish an

inclusive blue economy, it is important to engage communities living around water bodies in practical action to conserve and manage water ecosystems. Engagement of communities is an essential step but also a challenging one in practice.

Vulnerable fishers and people living around water bodies need support to be able to devote scarce time and resources to conservation. This can be done through incentive-based conservation management schemes. Traditional knowledge systems applied by communities to conserve the natural environment can be integrated in oceans and other water bodies' management. Harnessing, the full potential of the blue economy requires the effective inclusion and active participation of all societal groups to protect the heritage, culture and way of life of these communities.

Global processes to develop international legally binding treaties on the governance of area that lie outside national jurisdiction provides a unique opportunity for an inclusive blue economy. Due consideration should be given for application of appropriate indigenous knowledge systems for conservation. Opportunities for economic empowerment of communities include income generation and wealth creation through the development of creative cultural industries along the various water bodies'.

A well-developed hospitality industry provides employment to communities and promotes investment in infrastructure and growth of related service industries. Harnessing medicinal substances and extracts from ocean and other water body resources can contribute to improved health standards for communities. Investments are needed in programmes that sensitize and facilitate people and communities to understand their roles and responsibilities in protecting, managing and conserving their water ecosystems to achieve sustainable development.

Leveraging the blue economy for sustainable development and inclusive growth faces various challenges that negatively impact individuals and communities and these include: illegal, unreported, and unregulated (IUU) fishing, piracy, armed robbery, maritime terrorism, illicit trade in crude oil, arms, drugs and human trafficking and smuggling of contraband goods. Tax evasion by enterprises involved in unregulated fishing denies governments and local authorities much needed revenue. The degradation of marine ecosystems through discharge of oil, the dumping of toxic waste creates a health hazard for communities in addition to the environmental pollution. Illegal sand harvesting and the destruction of coral reefs and coastal forests lead to irreversible environmental damage, and reduce the resilience of coastal communities by removing natural barriers that limit climate change impacts such as sea-level rise, coastal erosion and storm surge. Other

challenges that communities living around water bodies experience include; unclear property rights, , non-inclusion of indigenous knowledge systems in programmes and activities aimed at the sustenance of marine and water ecosystems, over reliance on marine and other water resources hence the need to identify alternative sources of livelihoods. .

An inclusive blue economy requires short- and long-term efforts, which can seize existing opportunities to bring together stakeholders to establish reforms and sustainable global governance processes that affect people, communities and societies. In addition, the blue economy requires the building of inclusive processes, including a concerted effort to identify and involve vulnerable groups. Improving market infrastructure and access for small-scale fishers and artisanal workers can create more-sustainable outcomes that benefit the vulnerable communities. The blue economy requires a multi-sectoral approach to design appropriate policies to promote societal well-being and balancing the interests of people, communities and societies.

Panelists will be expected to guide deliberations by making presentations based on the following questions:

1. *How can reforms establish and sustain a more effective governance process on water bodies that is people, communities and society inclusive?*

2. *How can resources be mobilized for a global and comprehensive review for a more inclusive blue economy?*

3. *What investment in programs can be used to sensitize and facilitate people and communities to understand their roles and responsibilities in protecting, managing and conserving water ecosystems to achieve sustainable development and coastal resilience?*
4. *How do we ensure that women, youth and vulnerable members of communities are involved in the management of oceans and other water body resources and increase local content in the blue economy?*

5. *How do we diversify economic activities undertaken by communities to reduce poverty and overreliance on water body resources? How can we expand the value chains in the blue economy to open up economic opportunities for these communities? In regions where there has been under-reliance of*

ocean and other water body resources, how do we diversify economic activities to reduce poverty among communities?